

# Claims

- [c1] A method of generating a mesh plane for an IC carrier design, the mesh plane being defined on a field of grid points, the method comprising the steps of:  
activating a substantial portion of grid points of an intended mesh plane with active lines; and  
removing at least one active line to generate the mesh plane.
- [c2] The method of claim 1, wherein the activating step includes filling the substantial portion of grid points of the intended mesh plane with active lines, and then doubling a density of the intended mesh plane.
- [c3] The method of claim 1, further comprising the step of storing a set of active lines of the mesh plane as a multiple line shape.
- [c4] The method of claim 3, wherein the multiple line shape is selected from the group consisting of: a plus shape, a right angle, a square and a rectangle.
- [c5] The method of claim 3, further comprising the step of storing a plurality of collinear active lines as an un-

segmented line.

- [c6] The method of claim 3, further comprising the step of constructing the mesh plane using the stored multiple line shape.
- [c7] The method of claim 1, wherein the removing step includes removing at least one active line between a surrounded grid point, which is surrounded by other grid points that are not on a via, and the other grid points.
- [c8] The method of claim 1, further comprising the step of establishing a via pattern prior to the activating step, and wherein the removing step includes removing at least one active line to a grid point associated with a passthrough via that is not of the same network as the mesh plane.
- [c9] The method of claim 1, wherein the removing step includes removing an active line between a dangling grid point that is not associated with a via and only one other grid point.
- [c10] A method of generating a mesh plane for an IC carrier design, the method comprising the steps of:  
generating a mesh plane having a plurality of active lines; and  
storing a set of active lines of the mesh plane as a multi-

ple line shape.

[c11] The method of claim 10, wherein the mesh plane is defined on a field of grid points, and the generating step includes:

activating a substantial portion grid points of an intended mesh plane with active lines, and  
removing at least one active line to generate the mesh plane.

[c12] The method of claim 11, wherein the removing step includes at least one of:

removing at least one active line between a surrounded grid point, which is surrounded by other grid points that are not on a via, and the other grid points;

removing any active line to a grid point associated with a passthrough via that is not of the same network as the mesh plane based on a via pattern; and

removing an active line between a dangling grid point that is not associated with a via and only one other grid point.

[c13] The method of claim 10, further comprising the step of storing a plurality of collinear active lines as an unsegmented line.

[c14] The method of claim 10, further comprising the step of

constructing the mesh plane using the stored multiple line shape.

- [c15] A computer program product comprising a computer useable medium having computer readable program code embodied therein for generating a mesh plane for an IC carrier design where the mesh plane is defined on a field of grid points, the program product comprising: program code configured to activate a substantial portion of grid points of an intended mesh plane with active lines; and program code configured to remove at least one active line to generate the mesh plane.
- [c16] The program product of claim 15, further comprising program code configured to store a set of active lines of the mesh plane as a multiple line shape.
- [c17] The program product of claim 16, wherein the multiple line shape is selected from the group consisting of: a plus shape, a right angle, a square and a rectangle.
- [c18] The program product of claim 16, further comprising program code configured to store a plurality of collinear active lines as an un-segmented line.
- [c19] The program product of claim 15, wherein the removing program code includes program code configured to re-

move at least one active line between a surrounded grid point, which is surrounded by other grid points that are not on a via, and the other grid points.

- [c20] The program product of claim 15, further comprising program code configured to remove any active line to a grid point associated with a passthrough via that is not of the same network as the mesh plane.
- [c21] The program product of claim 15, wherein the removing program code includes program code configured to remove an active line between a dangling grid point that is not associated with a via and only one other grid point.
- [c22] A computer program product comprising a computer useable medium having computer readable program code embodied therein for generating a mesh plane for an IC carrier design, the program product comprising:  
program code configured to generate a mesh plane having a plurality of active lines; and  
program code configured to store a set of active lines of the mesh plane as a multiple line shape.
- [c23] The program product of claim 22, wherein the mesh plane is defined on a field of grid points, and the generating program code includes:  
program code configured to activate a substantial por-

tion of grid points of an intended mesh plane with active lines, and  
program code configured to remove at least one active line to generate the mesh plane.

[c24] The program product of claim 23, wherein the removing program code includes program code configured to:  
remove at least one active line between a surrounded grid point, which is surrounded by other grid points that are not on a via, and the other grid points;  
remove any active line to a grid point associated with a passthrough via that is not of the same network as the mesh plane; and  
remove an active line between a dangling grid point that is not associated with a via and only one other grid point.

[c25] The program product of claim 22, wherein the multiple line shape is selected from the group consisting of: a plus shape, a right angle, a square and a rectangle.

[c26] The program product of claim 22, further comprising program code configured to store a plurality of collinear active lines as an un-segmented line.

[c27] An IC carrier design system comprising:  
a mesh plane generating unit including:

means for activating a substantial portion of grid points of an intended mesh plane with active lines, the grid points being part of a field used to define the mesh plane; and

means for removing at least one active line to generate the mesh plane; and

a mesh plane storage unit including means for storing a set of active lines of the mesh plane as a multiple line shape.

[c28] The IC carrier design system of claim 27, wherein the mesh plane storage unit further includes means for storing a plurality of collinear active lines as an unsegmented line.

[c29] The IC carrier design system of claim 27, wherein the mesh plane generating unit further includes:  
means for removing at least one active line between a surrounded grid point, which is surrounded by other grid points that are not on a via, and the other grid points;  
means for removing any active line to a grid point associated with a passthrough via that is not of the same network as the mesh plane; and  
means for removing an active line between a dangling grid point that is not associated with a via and only one other grid point.

[c30] The IC carrier design system of claim 27, further comprising a mesh plane constructor for reconstructing a mesh plane based on the multiple line shape.